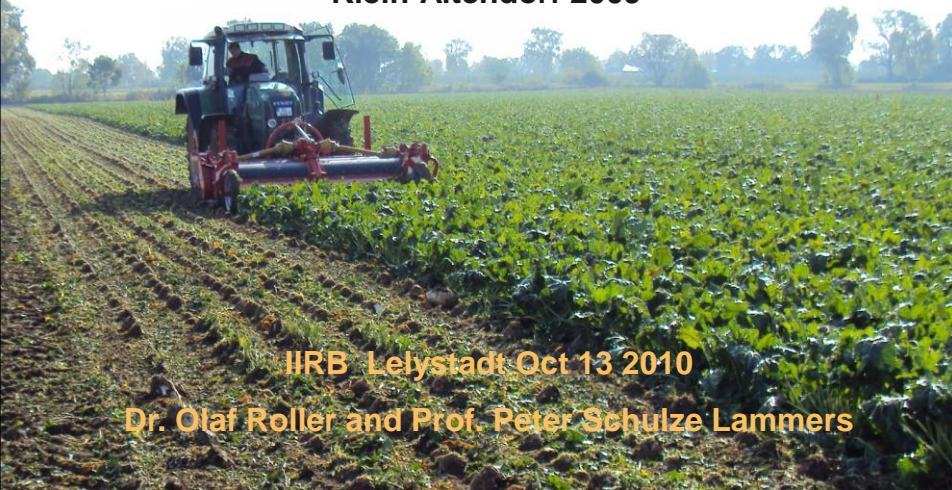


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Defoliation of Sugar Beet - Mass Increase and Quality of Operation - Klein-Altendorf 2009



IIRB Lelystadt Oct 13 2010
Dr. Olaf Roller and Prof. Peter Schulze Lammers


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Experimental design

- Classification of morphological data
- Harvest of test plots
- Evaluation with new score for defoliated beets

2



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Agronomique information


- Plant population: 87 000 plants per ha (98379)
- Top height: 5.21 cm (4,16)
- Beet diameter: 11.35 cm (in direction of travel) (9,65)
- Single beet weight: ~1230 g (800g)

Seligenstadt 2006

3

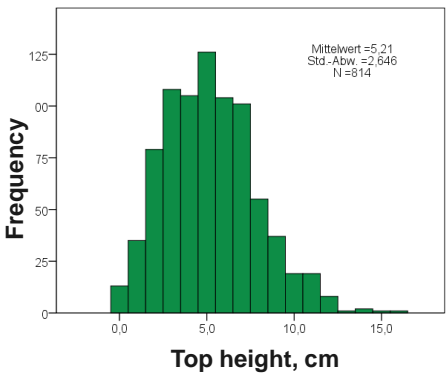


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- Top height distribution (Scheitelhöhe)




Mittelwert = 5.21
Std.-Abw. = 2.646
N = 814




4



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Yield calculation on basis of plant population

	Yield [t ha ⁻¹]
Beet	94.4
Leaf mass	39.7
Leaf mass dry	4.9


5



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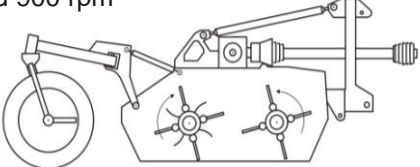
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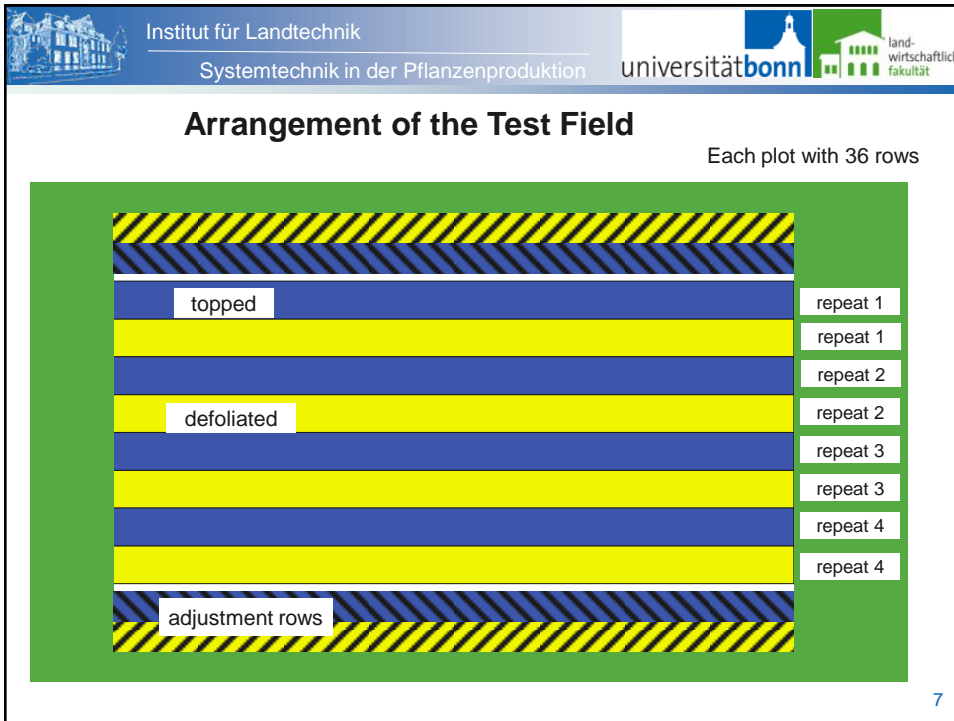
Defoliation: technology

- Technical process: leaf elimination by chopper with rubber flails upon the row and steal flails between rows for 6 six rows
- 2 counter rotating shafts: 1000 and 900 rpm
- Operation speed 6 km/h
- Power demand: 90 kW
- Tractor front mounted
or connected with six row tanker replacing the topping device





6




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Yield Sugar Beet

	Yield mass	Area	Yield	relative	relativ root losses considered
defoliated	133.6 t	1.595 ha	83.77 t ha ⁻¹	103.4 %	104.2 %
topped	128.8 t	1.590 ha	81.00 t ha ⁻¹	100.0 %	100.0 %

8








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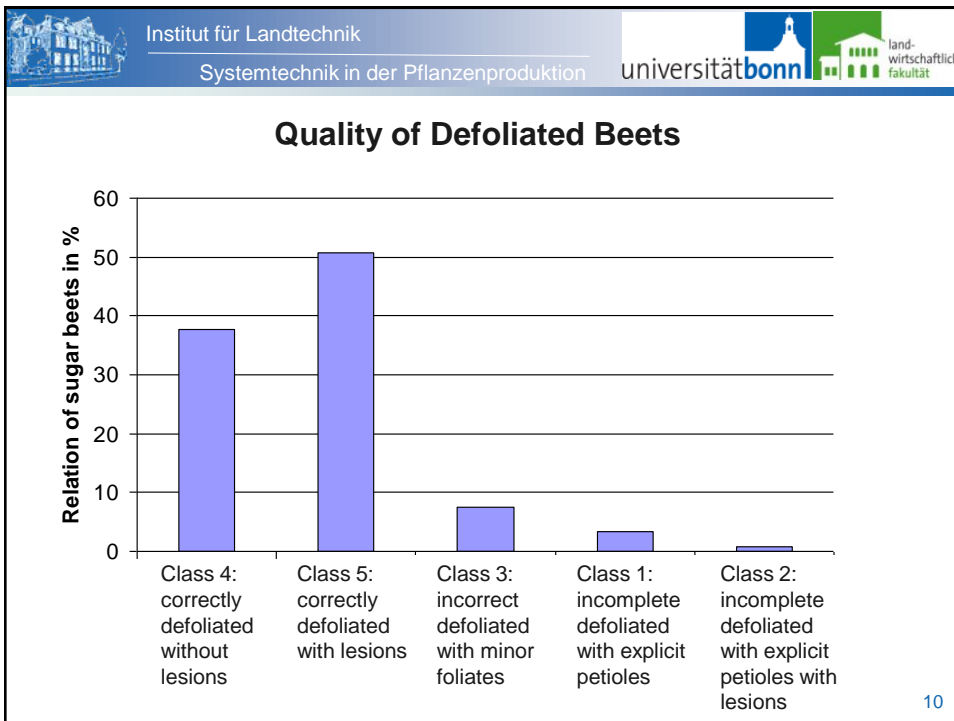
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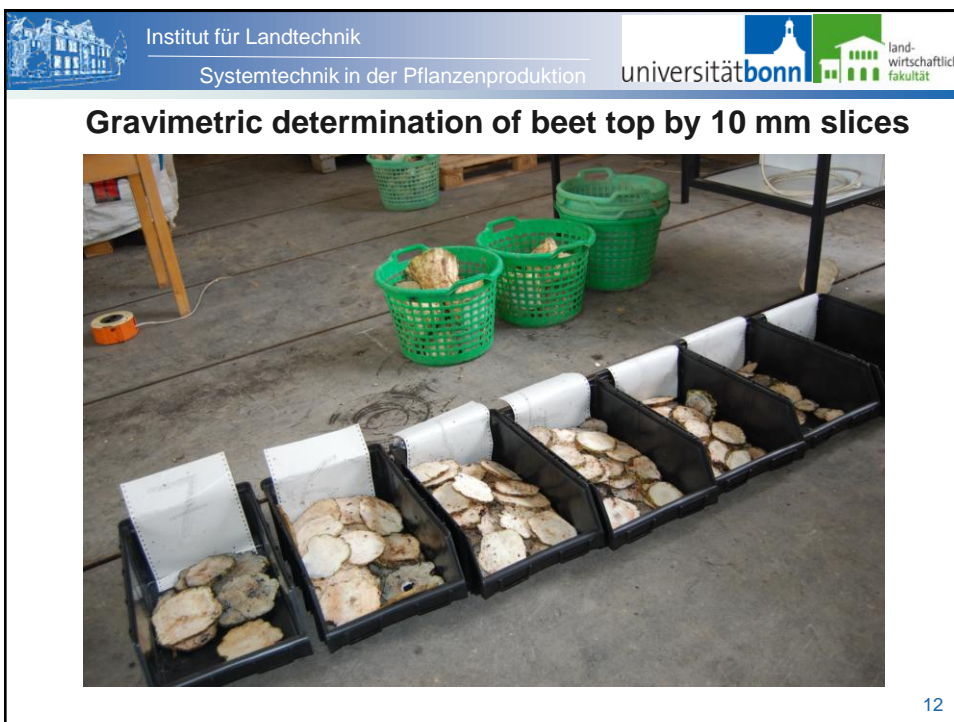
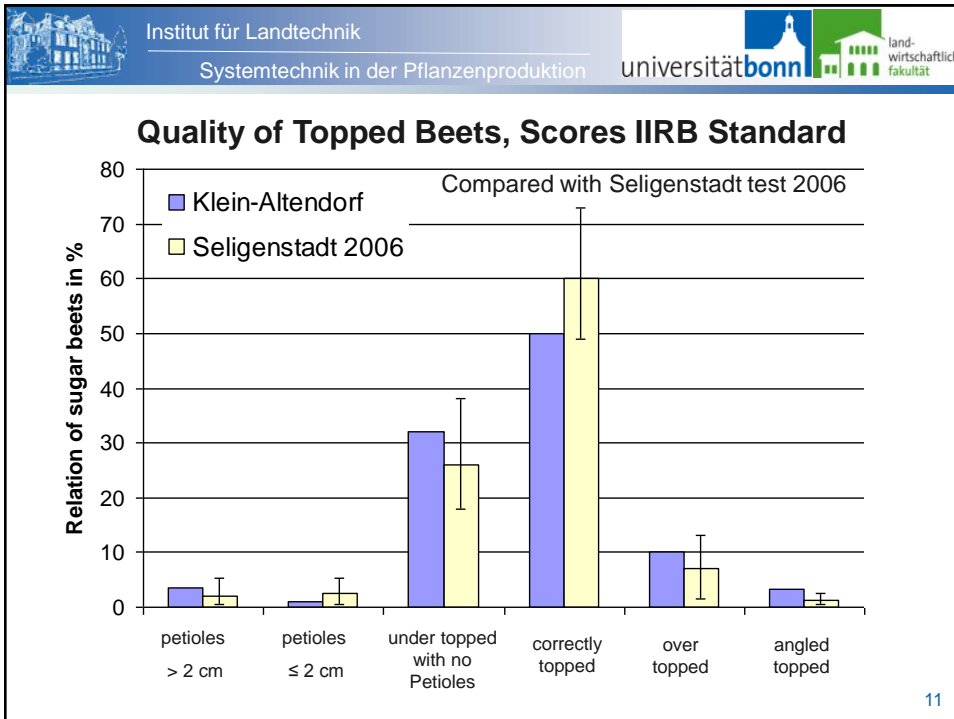
Quality of Defoliation, Scores Bonn 2009

1	2	3	4	5
				

Class 1: incomplete defoliated with explicit petioles
 Class 2: incomplete defoliated with explicit petioles with lesions
 Class 3: incorrect defoliated with minor foliates
 Class 4: correctly defoliated without lesions
 Class 5: correctly defoliated with lesions

9





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Mass loss of beet topp related to total beet mass in %				
<i>Beet mass classes, g</i>	<i>Average beet mass, g</i>	<i>up to 1 cm cutting height</i>	<i>up to 2 cm cutting height</i>	<i>up to 3 cm topping height</i>
1750 - 2600	1900	0,5	1,9	4,5
1500 - 1750	1620	0,6	2,5	5,8
1600 - 1500	1130	0,9	3,6	8,1
750 - 1000	835	1,3	5,0	11,3
500 - 750	550	2,0	7,6	16,4

13

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Summary				
<ul style="list-style-type: none"> • Increase in harvested mass when defoliation is applied: 4 % • Grimme defoliator eliminated 90% of the beets entire leaves • With conventional topping 95% of the beet plants were topped correctly (including over topped and angled topped), which means leaves have been eliminated fully • Visual evaluation of the beets (scoring) is time consuming, but the only applicable method the time being 				

14